LISTING OF THE CLAIMS

1. (Previously Presented) An adaptive antenna reception method, in which the directional beam of an array antenna consisting of a plurality of antenna elements is adaptively formed to receive a desired signal as well as to suppress interference signals in multiplexed signals transmitted from a plurality of senders, and the desired signal is corrected based on transmission channel estimation, the method comprising:

a first step of adaptively updating antenna weight based on minimum mean squared error (MMSE) control according to signals received by the respective antenna elements and an error signal obtained from the desired signal corrected based on the transmission channel estimation;

a second step of correcting the antenna weight obtained in the first step using a direction vector to maintain a correlation between the antenna weight and the direction vector constant;

a third step of receiving the desired signal through the array antenna using the antenna weight which has undergone the correcting process in the second step; and

a fourth step of estimating the transmission channel of the desired signal received in the third step to correct the desired signal based on the estimation result.

2. (Previously Presented) The adaptive antenna reception method claimed in claim 1, wherein, in the second step, a process in accordance with the following equation is performed:

$W''(i,m+1) = \left(I - \frac{c(i,m)c^{H}(i,m)}{N} \right) W'(i,m+1) + \frac{c(i,m)}{N}$ such that the following equation is satisfied:

$$w'^{H} c = 1$$

, where W' is an antenna weight vector obtained from an antenna weight vector W projected in the adaptively updating step on a constraint plane in N-dimensional antenna weight vector space , I is the identity matrix, H is the Hermitian conjugate operation, c is the direction vector to maintain a beam gain of a desired signal constant in the arrival direction of the desired signal, i is a path number with symbol number m, the direction vector is denoted by c(i, m) and the antenna weight obtained by the antenna weight adaptively updating step is denoted by w'(i, m).

3. (Previously Presented) The adaptive antenna reception method claimed in claim 2, further comprising:

a fifth step of obtaining a correlation value between signals received by the respective adjacent antenna elements;

a sixth step of calculating the average of the correlation values obtained in the fifth step;

a seventh step of calculating the arctangent of the average obtained in the sixth step to find the phase; and

an eighth step of calculating a direction vector based on the phase obtained in the seventh step.

4. (Original) The adaptive antenna reception method claimed in claim 1, wherein:

the first to fourth steps are performed with respect to, at least, one path; and

the desired signals corrected in the fourth step are combined to generate a multipath combined demodulation signal.

5. (Previously Presented) An adaptive antenna receiver, which adaptively forms the directional beam of an array antenna consisting of a plurality of antenna elements to receive a desired signal while suppressing interference signals in multiplexed signals transmitted from a plurality of senders, and corrects the desired signal based on transmission channel estimation, the adaptive antenna receiver comprising:

an antenna weight adaptive update means for adaptively updating the antenna weight based on minimum mean squared error (MMSE) control according to signals received by the respective antenna elements and an error signal obtained from the desired signal corrected based on the transmission channel estimation;

an antenna weight correcting means for correcting the antenna weight obtained by the antenna weight adaptive update means using a direction vector to maintain the correlation between the antenna weight and the direction vector constant;

a beamformer for receiving the desired signal through the array antenna using the antenna weight which has undergone the correcting process performed by the antenna weight correcting means; and

a transmission channel estimation means for estimating the transmission channel of the desired signal received by the beamformer to correct the desired signal based on the estimation result.

6. (Previously Presented) The adaptive antenna receiver claimed in claim 5, wherein the antenna weight correcting means performs a process in accordance with the following equation:

$$W'(i,m+1) = \left(I - \frac{c(i,m)c^H(i,m)}{N} \right) W(i,m+1) + \frac{c(i,m)}{N}$$ such that the following equation is satisfied:

$$w'^H c = 1$$

, where W' is an antenna weight vector obtained from an antenna weight vector W projected in the adaptive updating means on a constraint plane in N-dimensional antenna weight vector space , I is the identity matrix, H is the Hermitian conjugate operation, c is the direction vector to maintain a beam gain of a desired signal constant in the arrival direction of the desired signal, i is a path number with symbol number m, the direction vector is denoted by c(i, m) and the antenna weight obtained by the antenna weight adaptive updating means is denoted by w'(i, m).

7. (Original) The adaptive antenna receiver claimed in claim 6, further comprising:

an adjacent antenna correlation detection means for obtaining a correlation value between signals received by the respective adjacent antenna elements;

an antenna correlation averaging means for calculating the average of the correlation values obtained by the adjacent antenna correlation detection means;

an arctangent calculation means for calculating the arctangent of the average obtained by the antenna correlation averaging means to find the phase; and

a direction vector calculation means for calculating a direction vector based on the phase obtained by the arctangent calculation means.

8. (Original) The adaptive antenna receiver claimed in claim 5, further comprising a combine means for multipath combining at least one desired signal received through each path to generate a demodulation signal.